Elevated levels of persistent organic pollutants in free ranging populations of Puget Sound populations of Pacific salmon: the importance of residency in Puget Sound.

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Free ranging populations of anadromous Pacific salmon generally have low levels of persistent organic pollutants (POPs), as most of their growth occurs in open water of the Pacific ocean, distant from contaminant sources in populated coastal locations. However, the five species of Pacific salmon differ in their oceanic distribution with some species having a more coastal distribution. Furthermore, populations within species can also differ in their use of estuaries and in oceanic distribution. We analyzed whole body samples of 5 species of Pacific salmon from populated and unpopulated locations to assess species-specific body burdens in POPs and to determine whether Puget Sound salmon were more contaminated than other free-ranging populations. More Chinook populations were sampled than for the other salmon species, including a population resident in Puget Sound. Our results indicate that in remote, unpopulated areas, POP concentrations were highest in Chinook and sockeye salmon, likely because of their higher trophic position and higher fat content. For Chinook salmon, Puget Sound residents had the highest POPs concentrations, followed by Puget Sound populations believed to be ocean-reared and both were significantly higher than other free-ranging populations from other locations. A separate study on POPs in fillets of Puget Sound Chinook indicated that fish returning to spawn at a younger age (which were also less likely to have migrated far beyond Puget Sound) had higher POP concentrations than older fish that probably migrated further from Puget Sound. Collectively, these results suggest that residence in Puget Sound exposes Chinook salmon to higher POP concentrations and the longer a Chinook resides in Puget Sound, the greater its exposure to POPs will be.